



Jennifer Buchanan Gelb
Restoration Ecologist



Financial assistance for this project was provided, in part, by the Michigan Coastal Zone Management Program, Office of the Great Lakes, Department of Environmental Quality, under the National Coastal Zone Management Program, through a grant from the National Oceanic and Atmospheric Administration, U.S. Department of Commerce.




Tip of the Mitt Watershed Council Service Area

 Service Area Boundary

 Michigan Counties

Watersheds

 Carp River

 Cheboygan River

 Little Traverse Bay

 Lake Charlevoix

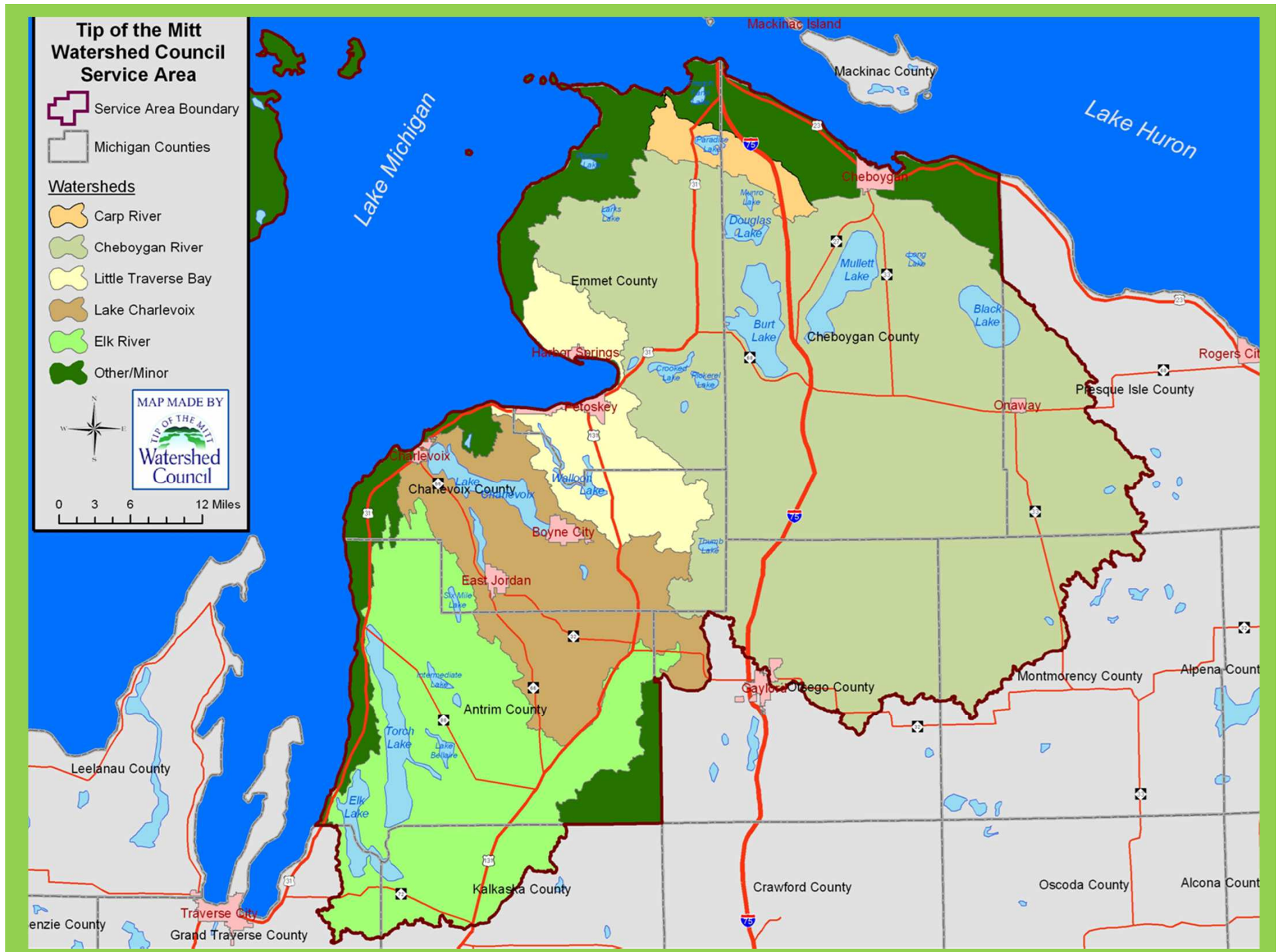
 Elk River

 Other/Minor



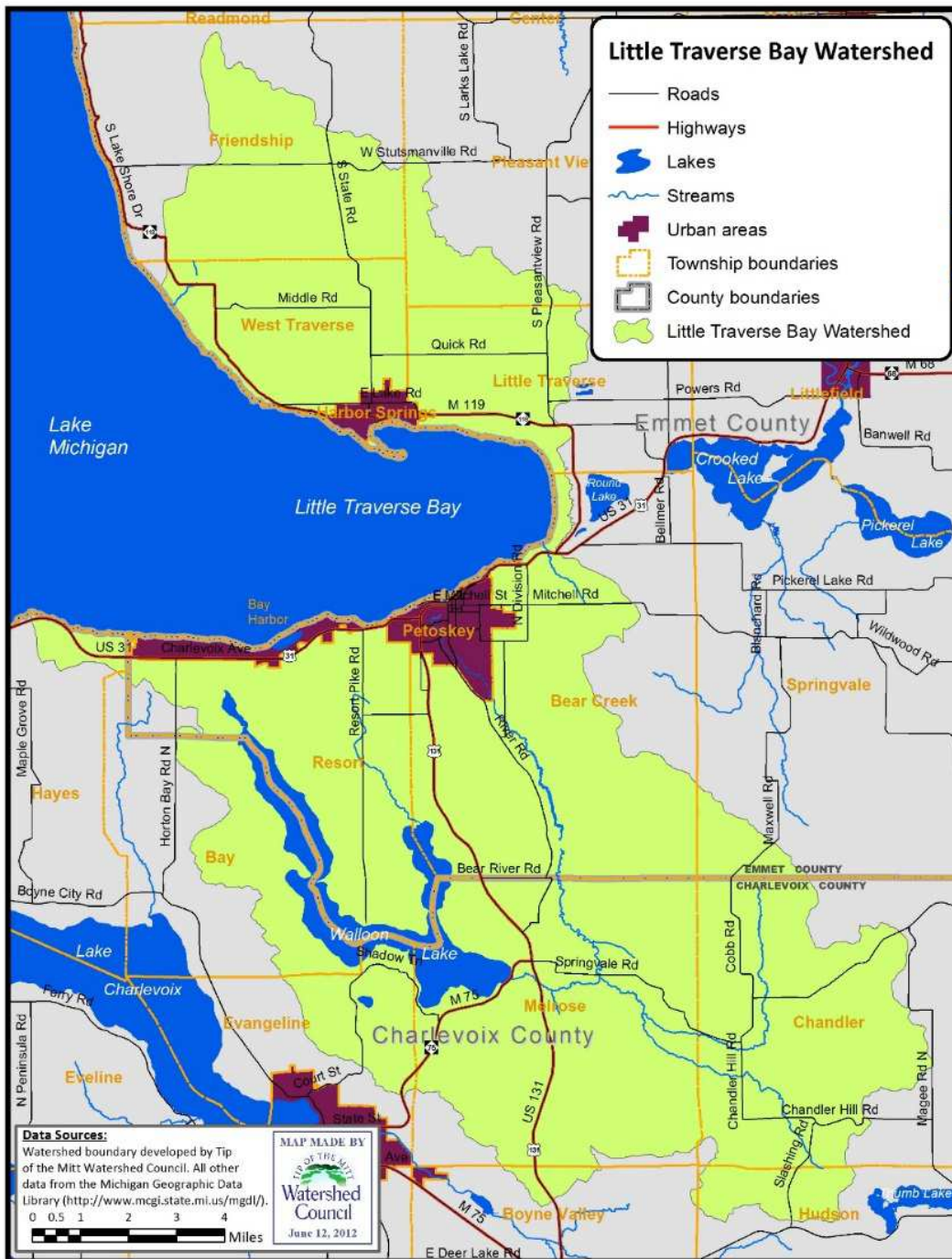
MAP MADE BY
TIP OF THE MITT
Watershed Council

0 3 6 12 Miles



Little Traverse Bay Watershed: Stormwater Matters

- LID workshop
- Stormwater Tour for Local Government Officials
- Rain Gardens and workshops
- Stormwater “Tips” in Petoskey News Review, Harbor Light, Welcome North, and Home Life
- LID publication (coming soon!)
- Budget
 - \$32,631.00 from grant
 - \$32,631.00 in match
 - \$65, 262.00 project total



Low-Impact Development Seminar

- May 1st in Petoskey
- 32 attendees including:
Engineers, architects,
landscape architects,
landscapers, planners, and
local government officials
- 2 Presenters

Donald D. Carpenter, PhD, PE, LEED® AP

Professor of Civil Engineering and Director of
the Great Lakes Stormwater Management
Institute at Lawrence Technological
University

Ralph Reznick, PE

Senior Engineer, Nonpoint Source Program,
Michigan Department of Environmental
Quality

Topics Covered:

- Principles of Low-Impact Development (LID)
- LID Hydrology considerations
- LID Site Planning
- Lid Structural Best Management Practices
- LID Economics, Construction, Maintenance considerations
- LID Case Studies

Missed it? Check out
the videos of the
event on:

Just search for Tip of
the Mitt Watershed
Council video
channel



Stormwater Tour for Local Officials

August 26, 2015

8:30 am – 12:30 pm

Presented by Tip of the Mitt Watershed Council

- Bus tour with 4 stops
 1. North Central Michigan College (NCMC) Stormwater Wetland
 - NCMC and TOMWC staff (Great Lakes Restoration Initiative)
 2. Petoskey Stormwater Systems and Management
 - City of Petoskey, Director and Supervisor of Public Works
 3. Tannery Creek Stormwater Issues and Plans
 - TOMWC staff (Great Lakes Restoration Initiative)
 4. Harbor Springs Stormwater Monitoring and Treatment
 - City of Harbor Springs, City Manager and Director of Public Works and Doug Fuller, former TOMWC staff

Rain Garden Workshops

- Two rain gardens installed (one in Harbor Springs, one in Petoskey)
- Rain gardens installed as part of hands-on workshop
- Currently soliciting for interested property owners
- Site criteria used to select sites
- Deadline is June 26th; hope to host workshops in late July or early August
- Cost/share with property owners (up to \$1,500 to each)

Tip of the Mitt Watershed Council is Offering a Matching Grant to Install a RAIN GARDEN!



How it works...

Tip of the Mitt Watershed Council is currently seeking property owners who are interested in receiving a rain garden. From now until June 26th, Watershed Council staff will be conducting site visits to residences **within the city limits of Harbor Springs and Petoskey**. Two rain gardens will be installed on a cost-share basis, meaning **each rain garden will receive partial funding from the grant**, while the homeowner pays for the remaining costs. Each rain garden will be installed as part of a hands-on workshop that is open to the public. Workshops are tentatively scheduled for late July or early August, so be on the lookout for more information.

Interested in Installing a Rain Garden to reduce stormwater runoff?

Call to schedule a FREE site visit!

Hurry, **June 26th is the deadline** to be considered for this special grant project.

You could get up to \$1,500 in matching funds!



For more information, call:
(231) 347-1181

Alexis.Schefka@watershedcouncil.org
or Jen@watershedcouncil.org

The rain gardens and workshops are part of the **Little Traverse Bay Watershed Stormwater Matters** project funded by the Michigan Coastal Zone Management Program, Office of the Great Lakes, Department of Environmental Quality and the National Oceanic and Atmospheric Administration.

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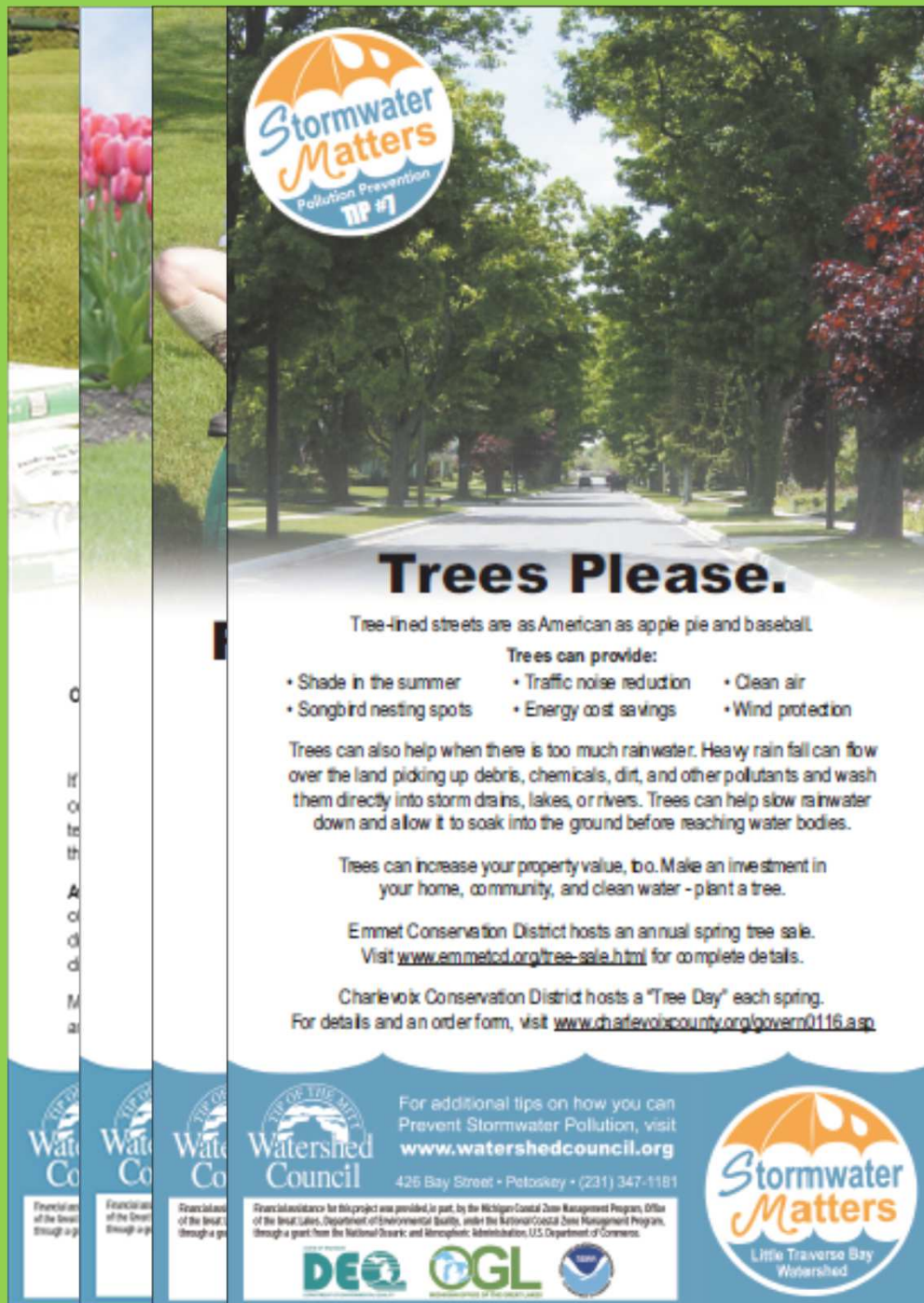
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Stormwater Matters
Pollution Prevention
TIP #1

Trees Please.

Tree-lined streets are as American as apple pie and baseball.

Trees can provide:

- Shade in the summer
- Traffic noise reduction
- Clean air
- Songbird nesting spots
- Energy cost savings
- Wind protection

Trees can also help when there is too much rainwater. Heavy rain fall can flow over the land picking up debris, chemicals, dirt, and other pollutants and wash them directly into storm drains, lakes, or rivers. Trees can help slow rainwater down and allow it to soak into the ground before reaching water bodies.

Trees can increase your property value, too. Make an investment in your home, community, and clean water - plant a tree.

Emmet Conservation District hosts an annual spring tree sale. Visit www.emmetcd.org/tree-sale.html for complete details.

Charlevoix Conservation District hosts a "Tree Day" each spring. For details and an order form, visit www.charlevoixcounty.org/govern0116.asp.

For additional tips on how you can Prevent Stormwater Pollution, visit www.watershedcouncil.org

426 Bay Street • Petoskey • (231) 347-1181

Watershed Council

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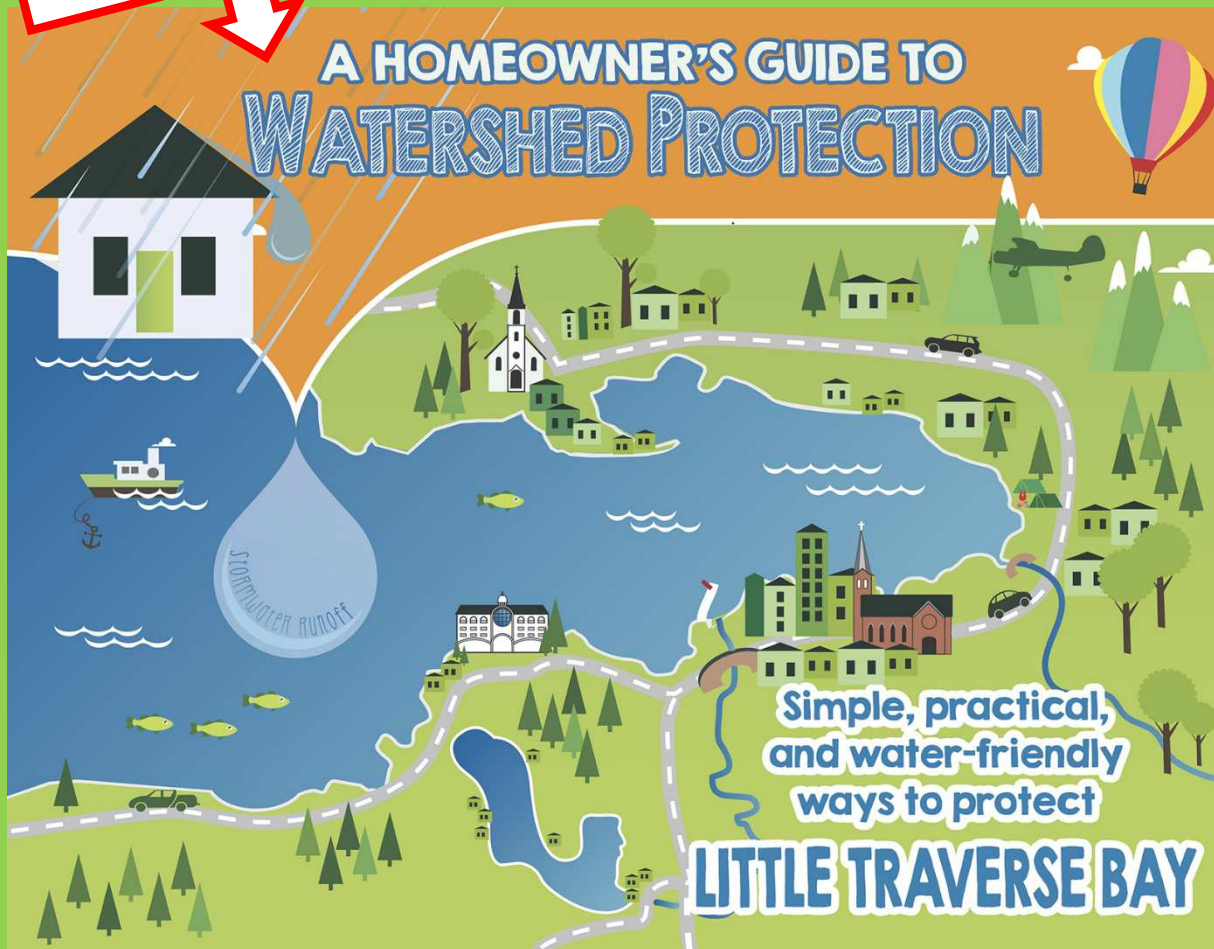
Stormwater Matters
Little Traverse Bay Watershed

Stormwater Matters Ads

- 13 different, ¼ page "ads" aimed at homeowners
- Appearing in two local newspapers=total readership of 25,000
- 12 months
- Every other week
- Plus, 4 special ads in Welcome North and Home Life
- Value of \$10,490

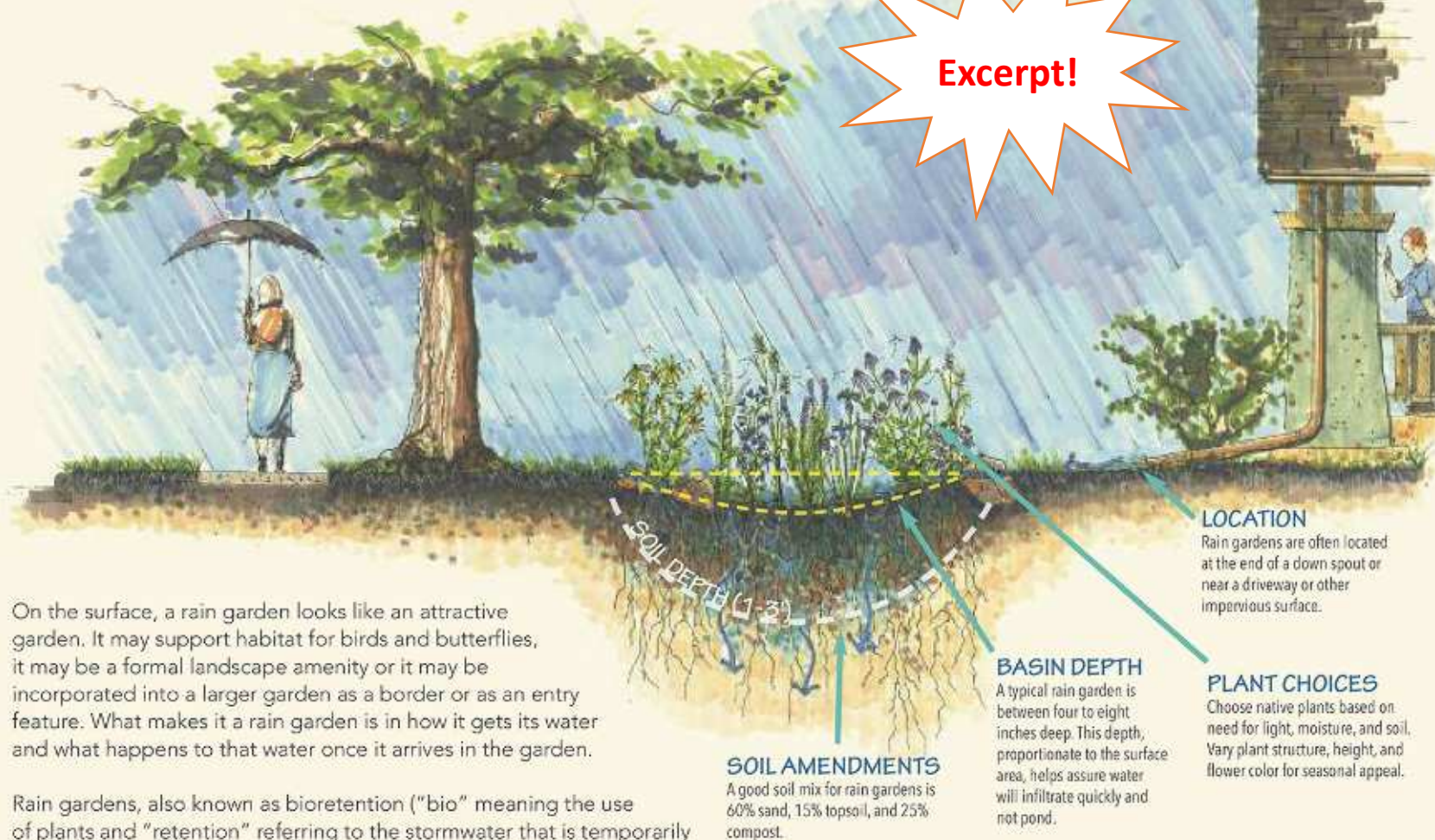
Low-Impact Development Publication

The Cover!!!



- Nearly completed
- Target audience is LTBW residents.
- 24 pages!
- Watershed history and information, nonpoint source pollution, stormwater tips, and LID techniques: from rain gardens to green roofs
- 4000 copies
- Printing paid for by foundation; serves as match (\$3,850)
- Reviewers (Little Traverse Bay Watershed Advisory Committee members) also serve as match

Protect Little Traverse Bay with Rain Gardens



On the surface, a rain garden looks like an attractive garden. It may support habitat for birds and butterflies, it may be a formal landscape amenity or it may be incorporated into a larger garden as a border or as an entry feature. What makes it a rain garden is in how it gets its water and what happens to that water once it arrives in the garden.

Rain gardens, also known as bioretention ("bio" meaning the use of plants and "retention" referring to the stormwater that is temporarily stored before it soaks into the ground) basins, allow stormwater to be both cleaned and reduced in volume, putting into practice the stormwater strategy:

"Slow it Down, Spread it Out, and Soak It In."

LOCATION

Rain gardens are often located at the end of a down spout or near a driveway or other impervious surface.

BASIN DEPTH

A typical rain garden is between four to eight inches deep. This depth, proportionate to the surface area, helps assure water will infiltrate quickly and not pond.

PLANT CHOICES

Choose native plants based on need for light, moisture, and soil. Vary plant structure, height, and flower color for seasonal appeal.

SOIL AMENDMENTS

A good soil mix for rain gardens is 60% sand, 15% topsoil, and 25% compost.

SIZE

A rain garden is typically 10-30% the size of the impervious surface that generates runoff.

Illustration by Doug Adamson,
RDG Planning & Design, provided by
USDA-NRCS in Des Moines, Iowa.

Protect Little Traverse Bay with

Porous Pavements

Permeable or porous pavement surfaces are suited for parking lots, low traffic residential streets, driveways, and sidewalks. The porous or permeable surfaces allow stormwater to infiltrate into underlying soils promoting pollutant treatment and groundwater recharge.

Permeable paving options include porous permeable asphalt and concrete, block pavers, and vegetated grid systems.

Permeable pavers and porous asphalt or concrete are generally used in higher traffic parking and roadway applications; while vegetated grid systems are more commonly used in auxiliary parking areas and roadways.

Permeable pavers are comprised of interlocking concrete bricks, separated by joints, or gaps, filled with small stones or sand, which are laid over a bed of aggregate stones. Water is able to infiltrate through the joints in the pavers, and is stored in void space in the stone bed underneath the paver surface, where it is then filtered back into the soil.

Porous asphalt is the same as regular asphalt except it is manufactured with the fine materials omitted, leaving open spaces that allows water to filter through to a "recharge" or drainage bed.

Porous concrete is composed of materials that result in voids when it is dry, by allowing water to drain through a bed of stone.

Vegetated grid systems are plastic or concrete grids over a bed of drainage material and soil. The voids are then seeded with low maintenance grass varieties.

AVERAGE COST OF POROUS PAVEMENTS

Permeable Pavers:	\$5.00 - \$10.00/sq. ft.
Porous Concrete:	\$2.00 - \$6.50/sq. ft.
Porous Asphalt:	\$0.50 - \$1.00/sq. ft.
Vegetated Grid System:	\$1.50 - \$5.75/sq. ft.

Examples of Porous Pavements



Permeable Pavers



Permeable Concrete

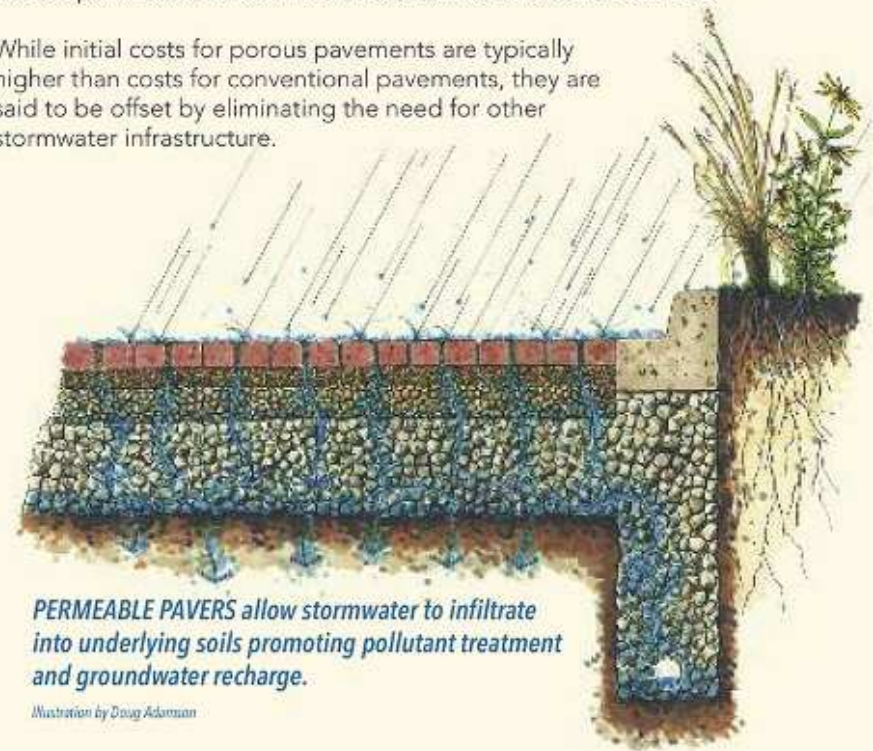


Grass Pavers

Excerpt!

Depending on design, paving material, soil type and rainfall, permeable pavements can infiltrate as much as 70% to 80% of annual rainfall. In addition, when properly selected, designed, constructed, and maintained, porous pavements function as intended in cold-weather climates.

While initial costs for porous pavements are typically higher than costs for conventional pavements, they are said to be offset by eliminating the need for other stormwater infrastructure.



PERMEABLE PAVERS allow stormwater to infiltrate into underlying soils promoting pollutant treatment and groundwater recharge.

Illustration by Doug Adamson



The average household spends as much as \$500 per year on their water and sewer bill and could **save about \$170** per year by installing water-efficient fixtures and appliances...and **EVEN more** when they conserve water.



See the reverse side for **water saving ideas** for every budget.

*Source: EPA Water Sense website <http://www.epa.gov/WaterSense>

City of Petoskey: Utility Inserts

The idea: to include with
monthly city utility bills

Grant proposal: sought and
obtained support from city

Grant Awarded

Mock-up developed and
submitted to city

City declined

Reason: new management felt if
allowed then it would "open up a
can of worms"



SAVING is simple.

As much as **50 percent** of the water we use outdoors is wasted from inefficient watering methods and systems. Reducing your water consumption can **reduce your water bill!**

Quick and easy water saver

Take these steps to save water immediately.

- Adjust your watering schedule. Water your lawn and plants early or late in the day (before 10 am or after 7 pm).
- Take your car to a commercial car wash that uses recycled water.
- Use a broom instead of a hose to clean driveways and sidewalks.

Water conservation guru

A little effort can yield big water savings.

- Mulch! Three inches of mulch maintains soil moisture and reduces evaporation.
- Examine your sprinklers and adjust them so they water your plants, not your walls or sidewalk.
- Install a rain barrel to collect water from the roof to be used for watering plants and your lawn.

Committed conserver

Make these changes to be water efficient for years.

- Install a self-adjusting irrigation controller and a drip irrigation system.
- Select native plants! They are tolerate to our local climate and require less care and watering.
- Learn to read your meter and check for silent leaks.



Start saving water INDOORS too!

For additional water saving tips, visit
www.watershedcouncil.org

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A special thank you to the City of Petoskey for allowing us to insert this important message in your water bill.